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PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Improvements in or relating to Anti-dazzle Devices for use on Vehicles.

We, ALAN LAWRENCE MILLER, of 29, Hamilton Square, Birkenhead, in the County of Chester, and EDWARD THOMAS LAWSON HELME, of 23, Hamilton Road, Wallasey, in the County of Chester, both British Subjects, do hereby declare the nature of this invention, and in what manner the same is to be performed, to be particularly described and ascertained, in and by the following statement:—

This invention is for improvements in or relating to anti-dazzle devices for use on vehicles, and is concerned with the provision of a novel combination for eliminating or minimizing the dangerous effects of temporary blinding of the driver of a vehicle from the headlights of another vehicle travelling in the opposite direction.

The blinding effect of oncoming headlights (which is of a temporary nature) is dangerous chiefly because of the inability of the eye to distinguish objects in the dark region behind the oncoming headlight beam and on the off-side of an oncoming vehicle (i.e. in the region into which the passing vehicle is about to enter).

One object of the invention is to provide an improved construction for minimizing the danger of invisibility in the dark region behind the headlights of a vehicle, so that an oncoming driver will be able to see objects, e.g. pedestrians and cyclists, in this region. A further object of the invention is to provide a suitable construction of safety-light for use on a vehicle, whereby in addition to illuminating the dark region on the off-side of a vehicle behind the headlights a warning is given to vehicles in the rear not to pass the vehicle on which the safety-light is lit.

According to the present invention there is provided in a vehicle, such as a motor car, which has headlights, a safety-light located on the rear off-side quarter of the vehicle and at such a height above the ground that it will effectively illuminate any object in the dark region on the rear off-side of the vehicle, and comprising a line or multi-point source of light arranged in relation to a reflector or

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reflectors, the focal axis or axes of which are downwardly directed to illuminate the road surface, so as to project a spread beam or beams of light transversely to the direction of travel of the vehicle, and towards the back of the vehicle, and means for diffusing the said beam or beams whereby the dark region referred to is evenly illuminated. Conveniently, the illuminating power of the safety-light will be substantially equal to that of the vehicle headlights. Owing to the various widths and cambers of road surface the illumination of the whole road width for every road on which the vehicle carrying the safety-light may be run necessitates the axis of the light beam being arranged downwardly to give the best average illumination of the dark region hereinbefore described. It will be appreciated, therefore, that the downward angle of the axis of the light beam with respect to the horizontal will depend on the area to be covered by the beam when a vehicle is travelling on a steeply cambered wide road. Now the angle which the axis of the light beam makes with the horizontal under the conditions just described will cause the beam to illuminate the foot-path and, say, house-wall when the vehicle is on the crown of a narrow street. In some cases, therefore, it may be desirable to incorporate means for maintaining the downward angle of the axis of the light beam more or less constant with respect to the horizontal for varying conditions of road surface camber; for example, the lamp may be mounted on a pivot, and the angle of the axis of the light beam controlled by a counter weight.

Various examples of a vehicle safety light constructed in accordance with the present invention will now be described with reference to the accompanying drawings, whereon:—

Figure 1 is a plan view of a vehicle with the safety-light in one suitable position, the shaded portions indicating approximately the beam area, and showing a portion of a vehicle travelling behind the vehicle provided with the safety-light, and a portion of a vehicle about to enter the dark region illuminated by the safety-light.

Figure 2 is a front elevation of a vehicle provided with the safety-light, the direction of the safety-light being diagrammatically illustrated.

Figures 3 and 4 are a sectional elevation and plan respectively of one form of safety-light fitting suitable for mounting on the rear off-side of a vehicle, at the position indicated in Figure 1.

Figures 5 and 6 are an elevation and plan respectively of a modified form of light unit.

Figures 7, 8 and 9 are respectively a plan, elevation and section of a modified form of safety-light.

The form of light beam required from a safety-light in accordance with the invention is a substantially fan-shaped beam having a substantially even intensity of illumination normal to the direction of travel of the vehicle. The safety-light is arranged on the car to give conditions of illumination which are illustrated diagrammatically in Figures 1 and 2. Viewed from above the car the light beam projected across the road is substantially fan-shaped, and of even intensity of illumination. This beam area is indicated at 10 in Figure 1. A secondary beam area comprising a rearwardly projected beam also of even intensity of illumination but which may be less intense than the transverse beam 10 is marked 11 on Figure 1. The focal axis of the beam area 11 is projected at approximately 45° to the focal axis of the beam area 10. As shown in Figure 2 the beams are projected not horizontally across the road, but in a downward direction (at an angle which will vary according to the height at which the safety-light is mounted on a vehicle) to illuminate the road surface as well as the dark region on the off-side of the vehicle.

A form of safety-light which has been found successful in satisfactorily illuminating the dark region on the off-side of a vehicle is shown on Figures 3 and 4. This safety-light comprises a casing 16 (conforming to the contour of the rear off-side of the vehicle) on which are mounted three parabolic reflectors 17, 18, 19 with appropriate light sources 20, 21, 22 in focus. The light sources are connected in parallel and are of course fed from the car accumulator through a suitable switch. The units 17, 20 and 18, 21 are arranged to project a light beam normal to the direction of travel, whilst the unit 19, 22 projects a light beam in a direction which is inclined approximately at 45° to the direction of travel. The focal axes of the reflectors are downwardly inclined, and means may be provided for adjusting these focal axes in accordance with the height

above the ground at which the casing 16 is connected to the vehicle, and in accordance with the width of illumination desired. The two units which project the transverse beam are provided with a diffusing lens 23 also mounted on the casing 16 and consisting, for example, of vertically fluted glass for the purpose of spreading the transverse beam horizontally to give an even field of illumination. Similarly the rearward unit 19, 22 is located behind a diffusing lens. The diffusing lens 23 will be situated substantially normal to the focal axes of the light units. If desired the unit 19, 22 may be arranged to cast a beam on to the road at a distance from the vehicle rather greater than the transverse beam, i.e. the focal axis of the rearward unit would be at a lesser angle of declination from the horizontal than the side units.

A modified form of apparatus similar to that described with reference to Figures 3 and 4 is illustrated in Figures 5 and 6. In this example the casing 16 is adapted to be sunk into the mudguard 24 of a vehicle, which for this purpose would be recessed at 25 to accommodate the reflectors. The casing 16 for this example would be shaped to conform to the configuration of standard down-swept wings on the rear off-side of the car.

It will be appreciated that any form of switch may be used to control the lamp circuits. For example the switch may comprise a foot-operated spring plunger which could be depressed by the driver's foot to bring the safety-light into operation on the approach of another vehicle. By this means existing headlamp dipping or dimming devices can be used independently of the safety-light, and consequently no reduction of forward illumination of the road would be necessary for the convenience of an oncoming driver. Preferably the illuminating power of the safety-light is substantially equal to that of the headlights. If desired the safety-light may be sunk in the body-work of the vehicle and exposed by the operation of a shutter when the lamp has to be lit up. This construction may prove convenient in certain cases to maintain the outward appearance of the vehicle uniform. In some cases an emerald lens 29 may be mounted on the casing 16 and arranged to be illuminated when the safety-light is lit to give a signal to an oncoming driver that it is safe to pass the vehicle showing a safety-light. At the same time the rearward spot-light warns a vehicle behind not to pass when the safety-light is lit. It will be noted that the reflectors used in the safety-light consist only of the upper portion of a parabolic reflector. This is

to obtain the minimum amount of light divergence in a vertical plane. Furthermore, while the preferred means for producing horizontal diffusion of the beams of light is the wellknown vertically fluted lens, it is to be understood that reflectors shaped to provide horizontal diffusion may be used, and that such reflectors are included in the scope of the invention.

- 10 As shown diagrammatically in Figures 7, 8 and 9 a further modified form of safety-light may comprise a channel-shaped reflector 30 of parabolic form in cross section. In plan the reflector may conform approximately to a curve conforming to the body-curve of a saloon motor car. The light source in such a reflector consists of a line passing through the focal points of the vertical parabolic sections, and may conveniently comprise an electric incandescent filament or an electric gaseous discharge tube of the required shape.

- 25 If desired, the angle of the axis of the light beam with respect to the horizontal may be maintained substantially constant over different cambers of road surface by mounting the safety-light so that it can pivot in a vertical plane with a counter weight (e.g. a pendulum) attached to the casing of the safety-light to maintain the constant angle hereinbefore referred to.

- 30 Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. In a vehicle, such as a motor car, which is provided with headlights, a safety-light located on the rear off-side quarter of the vehicle and at such a height above the ground that it will effectively illuminate any object in the dark region

on the rear off-side of the vehicle, and comprising a line or multi-point source of light arranged in relation to a reflector or reflectors, the focal axis or axes of which are downwardly directed to illuminate the road surface, so as to project a spread beam or beams of light transversely to the direction of travel of the vehicle, and towards the back of the vehicle, and means for diffusing the said beam or beams whereby the dark region referred to is evenly illuminated.

2. A vehicle as claimed in claim 1, wherein the safety-light has an illuminating power substantially equal to that of the vehicle headlights.

3. A vehicle as claimed in either of the preceding claims, wherein the safety-light is mounted in a casing capable of pivoting in a vertical plane, and wherein the angle of pivot of the casing is controlled by a counter weight or the like for the purposes described.

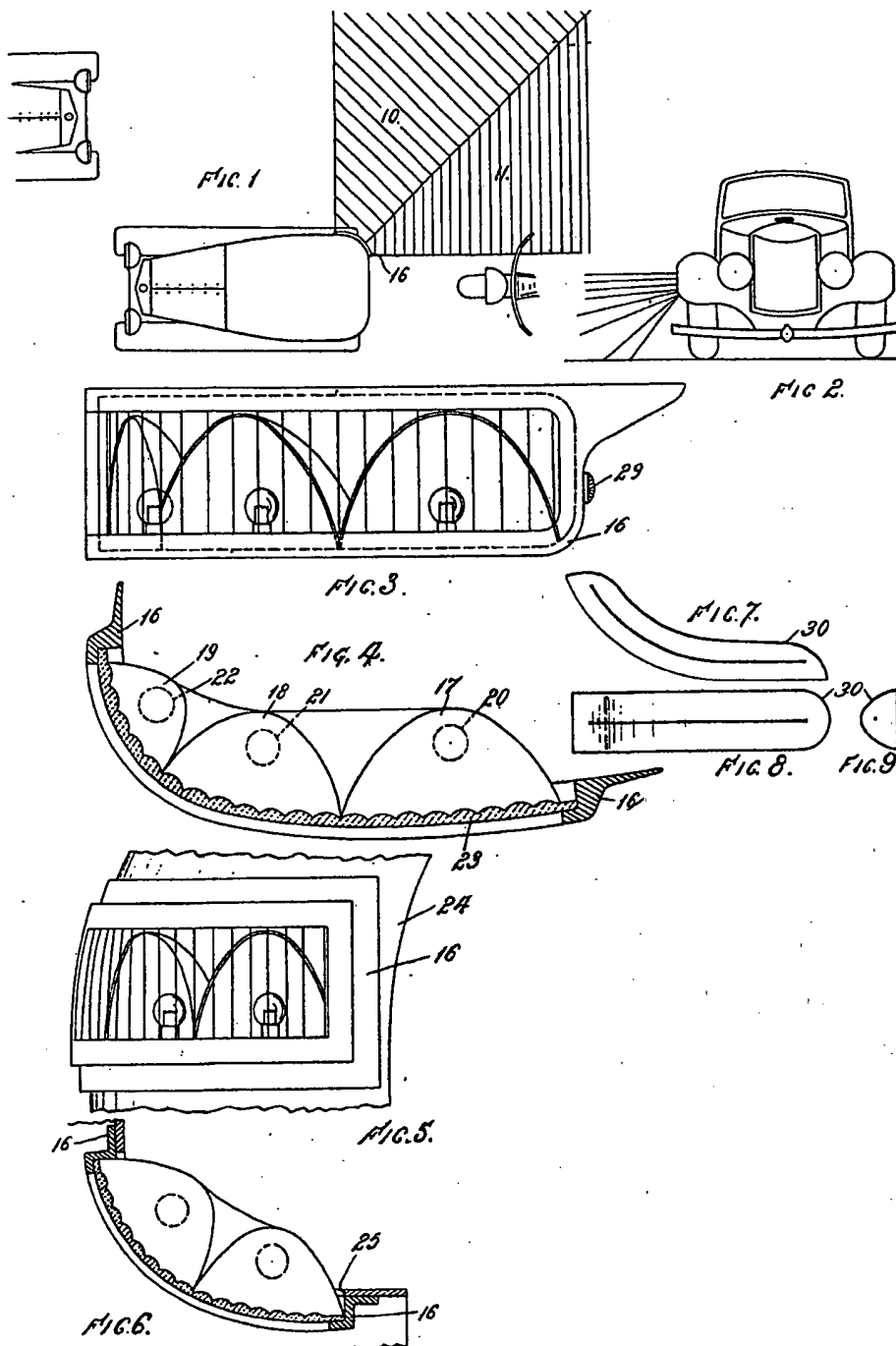
4. A vehicle as claimed in either of claims 1 and 2 wherein the safety-light is mounted in a casing conforming to the configuration of the rear off-side quarter of the vehicle, and is sunk or partially sunk in the said rear off-side quarter.

5. A vehicle as claimed in claims 1, 2, 3 or 4, wherein the casing for the safety-light is provided with a signalling device (e.g. a disc 29) illuminated by the safety-light and arranged to be visible to the driver of an oncoming vehicle.

6. A vehicle having a safety-light substantially as herein described with reference to the accompanying drawings.

Dated this 18th day of April, 1934.
E. R. ROYSTON & Co.,
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Tower Building, Water Street, Liverpool.

[This Drawing is a reproduction of the Original on a reduced scale.]



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